

REMARKS

Claims 3-15, 19 and 20 are currently pending in this application. Claims 1, 2 and 16-18 have been canceled. Claims 3-7, 9, 11-15, 19 and 20 have been amended. No new matter has been added by these amendments. Applicants have carefully reviewed the Office Action and respectfully request reconsideration of the claims in view of the remarks presented below.

Claim Rejections Under 35 U.S.C. §102

Claims 1, 2, 13, 15, 17 and 18 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,381,493 (Stadler).

Claims 1, 2, 17 and 18 have been canceled. Claim 13 has been amended to depend from claim 3. Claim 15, which depends from claim 13, now ultimately depends from claim 3. In view of these amendments, the §102(b) rejections of claims 1, 2, 13, 15, 17 and 18 are no longer in issue.

Claim Rejections Under 35 U.S.C. §103

Claim 14 was rejected under 35 U.S.C. §103(a) as being unpatentable over Stadler. In view of the amendment of claim 13, claim 14 ultimately depends from claim 3. Accordingly, the §103 rejection of claim 14 is no longer in issue.

Claims 3, 4, 7, 16, 19 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Stadler in view of U.S. Patent No. 5,213,106 (Lerner).

Independent claim 3 has been amended to include some of the features and elements of original claim 4 and original claim 11. Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Stadler in view of Lerner and further in view of U.S. Patent Publication 2003/0208129 (Beker). Claim 16 has been canceled. Independent claims 19 and 20 have been amended to recite elements and features similar to claim 3.

Claim 3 now recites a method including receiving electrical cardiac signals having a series of cycles, each cycle including a ventricular repolarization followed by a ventricular depolarization; identifying segments of the cardiac signals subsequent to a ventricular repolarization and prior to the ventricular depolarization following the ventricular repolarization; comparing the difference between the total amount of energy in one of the identified segments and the running average of the total amount of energy in a plurality of the identified segments to a first threshold; comparing just the running average to a second threshold; and detecting cardiac ischemia if either the first threshold or the second threshold is exceeded for a predetermined number of heart beats.

Stadler was cited as disclosing "deriving an energy value (potential energy) following each ventricular repolarization with a running average (col. 26, line 3)." The section of Stadler including column 26, line 3, describes the use of a normalization factor (NF) that is derived using R-wave amplitudes (column 25, lines 52-56).

Claim 3 recites the running average of the total amount of energy in a plurality of identified segments. It further recites that the identified segments are signals subsequent to a ventricular repolarization (T-wave) and prior to the ventricular depolarization (R-wave) following the ventricular repolarization. Thus, by definition, the claimed "identified segments" exclude R-waves. Accordingly, the normalization factor in Stadler, which is derived from R-waves, cannot correspond to the claimed running average, which is derived from segments of cardiac signals that specifically exclude R-waves.

Stadler was also cited as disclosing first and second thresholds and the detection of a sharp falling edge. Clarification regarding these disclosures was provided during a telephone conference with the Examiner on January 12, 2007, during which the ischemia parameter thresholds corresponding to the three ischemia parameters described at column 26, lines 21-23, were indicated as corresponding to the claimed first and second thresholds, and the comparison of respective ischemia parameters and

ischemia parameter thresholds, were indicated as corresponding to the claimed detection of a sharp falling edge.

Beker was cited as disclosing a signal analysis process involving the comparison of a current wave with a reference wave, and the comparison of average waves to a threshold.

Amended claim 3 no longer recites a sharp falling edge. It does, however, recite features corresponding to those recited in original claim 11, directed toward energy comparison. Specifically, claim 3 now recites comparing the difference between the total amount of energy in one of the identified segments and the running average of the total amount of energy in a plurality of the identified segments to a first threshold; comparing just the running average to a second threshold; and detecting cardiac ischemia if either the first threshold or the second threshold is exceeded for a predetermined number of heart beats.

Applicants submit that the neither the comparison analysis of Stadler, *i.e.*, the comparison of three different ischemia parameters to three different ischemia thresholds, nor the comparison analysis of Beker, *i.e.*, current wave with reference wave, and average current wave with a reference wave, and average waves to a threshold, correspond to Applicants' claimed comparison analysis.

In view of the foregoing, Applicants submit that neither Stadler, Lerner nor Beker, either alone or in combination, teach or suggest the combination of elements and features recited in independent claims 3, 19 and 20. Accordingly, Applicants request reconsideration of the §103 rejections of claims.

In view of the foregoing analysis of independent claim 3 in view of Stadler, Lerner and Beker, Applicants submit that, by virtue of the incorporation of subject matter recited in its independent base claim 3, dependent claims 4 and 7 are nonobvious over Stadler in view of Lerner.

Further regarding claim 4, Stadler was cited as disclosing a high-pass filtered signal by virtue of its bandpass filter, which was interpreted as a both a highpass filter and a lowpass filter. Claim 4 now recites the routing of cardiac signals through a high-pass filter operative to pass all signals above a cutoff frequency. A bandpass filter, by definition, passes only signals that are between a first cutoff frequency and a second cutoff frequency. Thus, the bandpass filter of Stadler cannot, "pass all signals above a cutoff frequency," as recited in claim 4.

Claims 5 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Stadler in view of Lerner and further in view of U.S. Patent No. 5,560,368 (Berger).

Claims 5 and 6 depend from claim 4. In view of the foregoing analyses of independent claim 3 and dependent claim 4, in view of Stadler, Lerner and Beker, Applicants believe that the rejections under §103 are moot as dependent claims 5 and 6 depend from allowable claims 3 and 4.

Claim 8 was rejected under 35 U.S.C. §103(a) as being unpatentable over Stadler in view of Lerner and further in view of U.S. Patent No. 6,609,023 (Fischell).

In view of the foregoing analysis of independent claim 3 in view of Stadler, Lerner and Beker, Applicants believe that the rejection of claim 8 under §103 is moot as dependent claim 8 ultimately depends from allowable independent base claim 3.

Claims 9 and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Stadler in view of Lerner and further in view of U.S. Patent Publication 2003/0153956 (Park).

In view of Park's publication date (August 14, 2003) and Applicants filing date (June 24, 2003), Park is prior art under 35 U.S.C. §102(e). David Sarisky, an attorney of record for the present U.S. Patent Application 10/603,429 ("the '429 application"), states that the '429 application and U.S. Patent Publication 2003/0153956, were at the time the invention of the '429 application was made, owned by Pacesetter, Inc. or subject to an obligation of assignment to Pacesetter, Inc.

Without addressing the merits of the rejections of claims 9 and 10, in accordance with the American Inventors Protection Act, Park does not qualify as prior art under 35 U.S.C. §103(a) via 35 U.S.C. §102(e) because the '429 application was filed on or after November 29, 1999 and the subject matter of Park and pending claims 9 and 10 were, at the time the invention was made, owned by or subject to an obligation of assignment to the same organization (see above "Statement Regarding Common Ownership or Obligation of Assignment"). In view of the foregoing, Applicants request withdrawal of the §103 rejections of claims 9 and 10.

Claims 11 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Stadler in view of Lerner and further in view of U.S. Patent Publication 2003/0208129 (Beker).

Claims 11 and 12 have been amended to depend from claim 3. In view of the foregoing analysis of independent claim 3 in view of Stadler, Lerner and Beker, Applicants believe that the rejections under §103 are moot as dependent claims 11 and 12 depend from allowable independent claim 3.

CONCLUSION

Applicants have made an earnest and bona fide effort to clarify the issues before the Examiner and to place this case in condition for allowance. Therefore, reconsideration and allowance of Applicants' claims 3-15, 19 and 20 are believed to be in order.

Respectfully submitted,

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Date

  
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